UNITED STATES DEPARTMENT OF COMMERCE
National Oceanic and Atmospheric Administration
NATIONAL MARINE FISHERIES SERVICE
Northwest Region
7600 Sand Point Way N.E., Bldg. 1
Seattle, WA 98115

Refer to:
2004/00198 (LAA)
2004/00508 (NLAA)

June 15, 2004

Mr. Barron Bail
District Manager
BLM - Prineville District
P.O. Box 550
3050 NE 3rd Street
Prineville, Oregon 97754

Re: Endangered Species Act Section 7 Formal and Informal Consultation and Magnuson-Stevens Fishery Conservation and Management Act Essential Fish Habitat Consultation on the Effects of the Deschutes Resource Area Grazing Program for 2004-2008, Lower Deschutes and Trout Creek Subbasins, Oregon

Dear Mr. Bail:

Enclosed is a document prepared by NOAA's National Marine Fisheries Service (NOAA Fisheries) pursuant to section 7 of the Endangered Species Act (ESA) on the effects of the Deschutes Resource Area (DRA) Grazing Program for 2004-2008. NOAA Fisheries concludes in the biological opinion (Opinion) included in this document that the proposed actions in the Connolly, Criterion, Delude, Frog Springs, H. Woodside, Duling, and Morelli Allotments are not likely to adversely affect Middle Columbia River (MCR) steelhead (*Oncorhynchus mykiss*), and the proposed actions in the remaining 10 allotments are not likely to jeopardize MCR steelhead. As required by section 7 of the ESA, NOAA Fisheries also includes reasonable and prudent measures with non-discretionary terms and conditions that NOAA Fisheries believes are necessary and appropriate to minimize the impact of incidental take associated with these actions.

This document also serves as consultation on essential fish habitat (EFH) pursuant to section 305(b) of the Magnuson-Stevens Fishery Conservation and Management Act and implementing regulations at 50 CFR Part 600. The Lower Deschutes and Trout Creek subbasins have been designated as EFH for Chinook salmon (*O. tshawytscha*) and coho salmon (*O. kisutch*). As required by section 305(b)(4)(A) of the MSA, included are conservation recommendations that NOAA Fisheries believes will avoid, minimize, mitigate, or otherwise offset adverse effects on EFH resulting from the proposed action. As described in the enclosed consultation, 305(b)(4)(B) of the MSA requires that a Federal action agency must provide a detailed response in writing within 30 days of receiving an EFH conservation recommendation.

If you have any questions regarding this consultation please contact Scott Hoefer of my staff in the Eastern Oregon Habitat Branch of the Oregon State Habitat Office, at 503.231.6938.

Sincerely,

Russell M Strach for

D. Robert Lohn
Regional Administrator

cc: Jerry Cordova, USFWS
Larry Timchak, ONF
Leslie A.C. Weldon, DNF
Dan Rife, DNF/ONF
Steve Pribyl, ODFW

Endangered Species Act - Section 7 Consultation
Biological Opinion

&

Magnuson-Stevens Fishery Conservation and Management Act
Essential Fish Habitat Consultation

Deschutes Resource Area Grazing Program for 2004-2008,
Lower Deschutes and Trout Creek Subbasins, Oregon

Agency:	U.S. Bureau of Land Management
Consultation Conducted By:	NOAA's National Marine Fisheries Service, Northwest Region
Date Issued:	June 15, 2004
Issued by:	Russell M Strach for _____ D. Robert Lohn Regional Administrator
Refer to:	**2004/00198 (LAA)** **2004/00508 (NLAA)**

TABLE OF CONTENTS

1. INTRODUCTION 1
   - 1.1 Consultation History 1
   - 1.2 Proposed Action 2
     - 1.2.1 LAA Allotments 5
       - 1.2.1.1 Bird Allotment 5
       - 1.2.1.2 Buck Hollow Allotment 6
       - 1.2.1.3 P.J. Conroy Allotment 6
       - 1.2.1.4 Ferry Canyon Allotment 7
       - 1.2.1.5 C. Forman Allotment 7
       - 1.2.1.6 Holmes Allotment 7
       - 1.2.1.7 Nartz Allotment 8
       - 1.2.1.8 J. Priday Allotment 8
       - 1.2.1.9 Ward Creek Allotment 8
       - 1.2.1.10 W.L. Webb Allotment 9

2. ENDANGERED SPECIES ACT 9
   - 2.1 Biological Opinion 9
     - 2.1.1 Biological Information 9
     - 2.1.2 Evaluating Proposed Action 13
     - 2.1.3 Biological Requirements 13
     - 2.1.4 Environmental Baseline 14
       - 2.1.4.1 Allotment-Specific Conditions 18
     - 2.1.5 Analysis of Effects 21
       - 2.1.5.1 LAA Allotments 21
       - 2.1.5.2 Minimizing Effects from LAA Livestock Grazing 24
       - 2.1.5.3 LAA Allotment-Specific Effects 24
       - 2.1.5.5 Summary of Effects 25
     - 2.1.6 Cumulative Effects 25
     - 2.1.7 Conclusion 25
     - 2.1.8 Conservation Recommendations 26
     - 2.1.9 Reinitiation of Consultation 27
   - 2.2 Incidental Take Statement 27
     - 2.2.1 Amount or Extent of Take 28
     - 2.2.2 Effect of the Take 28
     - 2.2.3 Reasonable and Prudent Measures 28
     - 2.2.4 Terms and Conditions 29

3. MAGNUSON-STEVENS FISHERY CONSERVATION AND MANAGEMENT ACT . . 31
   - 3.1 Background 31
   - 3.2 Identification of EFH 32
   - 3.3 Proposed Actions 33
   - 3.5 Conclusion 33

3.6 EFH Conservation Recommendations 33
3.7 Statutory Response Requirement 33
3.8 Supplemental Consultation 34

4. LITERATURE CITED 35

LIST OF TABLES

Table 1. BLM-administered livestock grazing allotments, approximate location by river mile (RM), acres (BLM and Private), amount of use authorized, and associated streams providing MCR steelhead spawning and rearing habitat. 2
Table 2. Rationale for NLAA determinations on the DRA grazing allotments for 2004-2008 grazing seasons 4
Table 3. Interim abundance targets for the MCR steelhead ESU (adapted from NOAA Fisheries 2003). 10
Table 4. Summer steelhead redd counts by year. 13
Table 5. Summary of Lower Deschutes River subbasin conditions in the action area. . . . 15
Table 6. Riparian transect schedule for Lower Deschutes River subbasin LAA allotments. 30

1. INTRODUCTION

1.1 Consultation History

On February 23, 2004, NOAA's National Marine Fisheries Service (NOAA Fisheries) received a letter from the Bureau of Land Management, Deschutes Resource Area (DRA) requesting consultation regarding the potential effects of the proposed 2004-2008 livestock grazing program on the DRA-administered allotments in the Lower Deschutes subbasin on Middle Columbia River (MCR) steelhead (*Oncorhynchus mykiss*). The accompanying biological assessment (BA) described proposed livestock grazing actions for 2004-2008 on the DRA, as well as the environmental baseline, and the potential effects of those actions on MCR steelhead in the lower Deschutes River.

A biological opinion (Opinion) was completed on January 2, 2001, for calendar year (CY) 2000 and 2001 grazing activities (NOAA Fisheries No.: 2000/00943). An Opinion was completed on March 6, 2003, for CY 2002 and 2003 grazing activities (NOAA Fisheries No.: 2002/00019), and an amendment to the terms and conditions was issued on April 8, 2003. Over the last year, the DRA has worked closely with NOAA Fisheries to develop the BA for this project. The DRA provided three separate drafts, each incorporating comments previously received from NOAA Fisheries. The DRA also provided copies of the BA to the Level 1 team members from the Deschutes National Forest and U.S. Fish and Wildlife Service, neither of which provided comments on the BA.

Jimmy Eisner of the DRA organized and led a monitoring float trip with Scott Hoefer of NOAA Fisheries on the Deschutes River on June 23, 24, and 25, 2003. The float started at Warm Springs, Oregon and ended at Harpham Flat just upstream from Maupin, Oregon. The purpose of the float was to monitor riparian condition associated with grazing allotments and recreation use along the Deschutes River. We were able to observe mainstem riparian condition associated with the Delude Allotment, Frog Springs Allotment, and Criterion Allotment. The riparian vegetation and streambanks within these allotments were in excellent condition, with almost no evidence of grazing. There were some trails leading down to the water, but it was not possible to distinguish between trails created by cattle and fishermen. It is likely that both use the same trails. Similar trail densities were observed along the river in areas outside of the allotments.

The MCR steelhead was listed as threatened under the Endangered Species Act (ESA) by NOAA Fisheries on March 25, 1999 (64 FR 14517). NOAA Fisheries applied protective regulations to MCR steelhead under section 4(d) of the ESA on July 10, 2000 (65 FR 42422).

The objective of this Opinion is to determine whether the proposed action is likely to jeopardize the continued existence of MCR steelhead. The objective of essential fish habitat (EFH) consultation is to determine whether the proposed action may adversely affect designated EFH for relevant species, and to recommend conservation measures to avoid, minimize, or otherwise offset potential adverse effects on EFH resulting from the proposed action.

On October 31, 2003, NOAA Fisheries received the end-of-year monitoring report for grazing in 2003. The report noted some unauthorized use in Macks Canyon. Term and Condition 1.a. in the March 6, 2003 Opinion required the DRA to "develop and implement an incidental take monitoring program that samples select MCR steelhead spawning areas biweekly, from the time of redd construction to emergence, to provide data demonstrating that cattle under the current grazing strategy are not trampling steelhead redds." In 2003, no MCR steelhead redds were found in active grazing pastures, so there is no new information to describe the level of risk to redds associated with livestock trampling during winter and early spring grazing. The monitoring report also added that the winter, early-spring grazing strategies do not impact riparian habitat, so stubble height, use of woody vegetation, and bank damage are not monitored.

1.2 Proposed Action

The BA submitted to NOAA Fisheries on February 23, 2004, describes proposed livestock grazing activities for 2004-2008 on 17 allotments in the Lower Deschutes subbasin on the DRA. The BA provided important information for each allotment. A summary of allotment information is found in Table 1.

Table 1. BLM-administered livestock grazing allotments, approximate location by river mile (RM), acres (BLM and Private), amount of use authorized, and associated streams providing MCR steelhead spawning and rearing habitat.

Allotment (Allotment Number) and Names of Pastures Where MCR Steelhead Habitat May Be Affected	**Approximate RM of Entry to Deschutes River**	**Acres BLM/Private**	**Authorized Number of Animal Unit Months (AUMs)**	**Associated Streams and Rivers (Miles of potential MCR steelhead spawning/rearing habitat on BLM; protective measures in place)**
Bird (7501) Macks Canyon Sixteen Canyon	23 (eastside)	4,737/ 2,770	265	Deschutes River (4.0; fenced to exclude cattle) Macks Canyon (1.6) Sixteen Canyon (Both intermittent on BLM land)
Buck Hollow (7558)** Creek	43 (eastside)	1,028/ 5,140	131	Buck Hollow Creek (2.2)
Connolly (7511) Boxcar, Oak Springs, Handicap, Sherars	48 (eastside)	2,494/ 30,225	373	Deschutes River (3.5; riparian pasture fences)
Conroy, P.J. (7512)** Unnamed	52 (eastside)	440/ 6,400	45	Deep Creek (0.7), Cottonwood Creek (0.9)
Criterion (7583) Two Springs Windy Flat	60 (eastside)	12,000/None	Not Yet Established	Deschutes River (6.5 total for two pastures; fenced to exclude cattle except for three watergaps)

Allotment (Allotment Number) and Names of Pastures Where MCR Steelhead Habitat May Be Affected	**Approximate RM of Entry to Deschutes River**	**Acres BLM/Private**	**Authorized Number of Animal Unit Months (AUMs)**	**Associated Streams and Rivers (Miles of potential MCR steelhead spawning/rearing habitat on BLM; protective measures in place)**
Delude (7518) Trout Creek, North, Mecca	85 and 93 (eastside)	1,210/ 940	76	Deschutes River (5.0 total for three pastures; 50% fenced to exclude cattle)
Duling (7520)**	55 (westside)	197/2,120	8	Wapinitia Creek (1.0)
Ferry Canyon (7547) River Riparian	25 (westside)	4,782/ 1,340	226	Deschutes River (3.5) Ferry Canyon (1.5)
Forman, C. (7526)** Unnamed	87 (eastside)	400/ 2,640	38	Trout Creek (0.5)
Frog Springs (7551) West, East	90 (eastside)	883/ 1,202	127	Deschutes River (3.5)
Holmes (7539)** Creek	43 (eastside)	314/ 2101	80	Buck Hollow Creek (0.25)
Morelli (7553)** Wapinitia	55 (westside)	647/ 725	12	Deschutes River (0.8; fenced to exclude cattle), Wapinitia Creek (0.2)
Nartz (7546)** Unnamed	87 (eastside)	80/ 200	12	Trout Creek (0.4)
Priday, J. (7560)** Unnamed	87 (eastside)	1,280/ 4,380	100	Trout Creek (1.0)
Ward Creek (7525)** Unnamed	87 (eastside)	160/ 160	8	Ward Creek (0.25)
Webb, W.L. (7579) River	43 (eastside)	2,978/ 4,467	242	Deschutes River (7.0) Buck Hollow Creek (0.75)
Woodside, H. (7584) Unnamed	50 (westside)	105/ 158	11	Deschutes River (1.0)

** This is a group 4 allotment defined in Appendix E of the "2000 Grazing Implementation Module" as "small, isolated pasture/use areas that may affect aquatic resources addressed by PACFISH/INFISH but cannot be managed effectively due to lack of access by BLM.

In the BA, the DRA determined that activities on 7 of the 17 livestock grazing allotments for the 2004-2008 grazing seasons are "may affect, but not likely to adversely affect" (NLAA) actions regarding MCR steelhead. Rationale for these determinations made by the DRA are included in Table 2.

Table 2. Rationale for NLAA determinations on the DRA grazing allotments for 2004-2008 grazing seasons.

Allotment Name	Watershed (5th Field HUC)	Rationale for NLAA Determination
Connolly	1707030609 1707030607	Allotments are along the mainstem Deschutes River where depths are considerable immediately beside the shoreline, preventing cattle from entering the water, particularly in the late winter, early spring when these allotments are grazed. Therefore, the risk of redd trampling is negligible. Riparian vegetation is in excellent condition in Criterion, Delude, and Frog Springs, based on June 2003 site visit. Connolly and H. Woodside were not visited in 2003, but are scheduled to be visited in September 2004.
Criterion	1707030607 1707030608 1707030609	
Delude	1707030603 1707030607	
Frog Springs	1707030610	
H. Woodside	1707030603	
Duling	1707030625 1707030624 1707030609	Allotment contains only rearing habitat for MCR steelhead in Wapinitia Creek, so there is no risk of redd trampling. In addition, Wapinitia Creek is extremely difficult for cattle to access due to steep topography.
Morelli	1707030625 1707030607	Allotment contains only rearing habitat for MCR steelhead in Wapinitia Creek, so there is no risk of redd trampling. In addition, Wapinitia Creek is extremely difficult for cattle to access due to steep topography. Deschutes River is totally excluded.

NOAA Fisheries concurs with the DRA's NLAA determination for the 7 allotments listed in Table 2, with concurrence based on the rationales summarized in the table. This Opinion serves as NOAA Fisheries' concurrence on the DRA-determined NLAA allotments, and these NLAA allotments are not analyzed in any further detail. The LAA allotments will be analyzed in further detail in this document.

Ten range allotments, Bird, Buck Hollow, P.J. Conroy, Ferry Canyon, C. Forman, Holmes, Nartz, J. Priday, Ward Creek, and W.L. Webb, were determined by the DRA to be LAA MCR steelhead. The grazing activities on these allotments will be the subject of this Opinion.

1.2.1 LAA Allotments

With the implementation of the Strategy for Salmon in 1992, and PACFISH in 1994 (USDA & USDI 1994), many riparian areas in the Deschutes River Basin have management programs in place to protect and enhance their condition. On the DRA, a concerted effort was begun in the early 1990s to rework grazing management strategies and institute science-based grazing systems to eliminate long-term habitat degradation and promote riparian recovery. Season-of-

use changes and restrictions were instituted based on the phenology of key plant species to determine timing of grazing and development of healthy riparian areas. Science-based grazing strategies to promote riparian vegetative growth have been completed for all of the DRA allotments within the Lower Deschutes subbasin. This has meant a shift from summer, hot season grazing to winter, early spring grazing strategies. All ten allotments covered in this Opinion use winter or early spring grazing strategies. Use may occur any time between November 1 and May 1, but most use occurs in the late winter and early spring.

1.2.1.1 Bird Allotment

The Bird Allotment (#7501) contains 4,737 acres of BLM land and 2,770 acres of private land. The BLM portion of this allotment borders the east side of the mainstem Deschutes River for 4.0 miles, and also contains 5.7 miles of three intermittent drainages, Allison, Macks, and Sixteen Canyons. This reach of the Deschutes River serves primarily as a migration corridor for MCR steelhead, since it is downstream from the White River, which enters the Deschutes near River Mile (RM) 47. Based on past spawning surveys, 95% of the steelhead spawning in the mainstem Deschutes River occur upstream from White River, and 5% occur downstream from the White River. MCR steelhead are known to spawn in Macks Canyon during high water years. Macks Canyon enters the Deschutes River near RM 23. The Deschutes River in this allotment has been excluded from grazing since the 1980s by a fence constructed in cooperation with Oregon Department of Fish and Wildlife (ODFW). The mouth of Macks Canyon has been fenced to exclude livestock since 1993, and the watergap on Sixteen Canyon has been closed since 1995. Springs in the North and Sixteen Canyon pastures have been developed as off-channel watering sites for livestock. Areas impacted by past season-long use and by a 1994 fire were reseeded with grasses in 1995. The area along Macks Canyon has been rested for the past six years. Riparian pastures are grazed in the spring before May 1.

Grazing on BLM land in this allotment is authorized for 265 AUMs. According to the BA and 2003 monitoring report, monitoring on the Bird Allotment consists of: (1) Riparian photo points (photos taken every 10 years) established in 1990, at quarter-mile intervals along Macks Canyon and Sixteen Canyon; (2) photo points (photos taken every 10 years) established in 1991 at two springs, an upland photo point established in 1998, and a step-point survey[1] conducted at each photo point; (3) utilization of key forage species surveyed every other year at three sites along Macks Canyon and Sixteen Canyon; (4) three riparian transects[2]: one established in 1996, one in 1997, and one in 2000; and (5) a nested frequency[3] study plot.

---

[1] Step-point survey consists of recording ground cover present at tip of foot after each step along a tape measure transect. Categories include: Bare ground, litter, gravel, cobble, stone, vegetation, and biological crusts.

[2] Riparian transects consist of measuring height and diversity of riparian vegetation.

[3] A nested frequency study is done to determine the frequency of occurrence of plant species in an area and changes in that frequency over time. A series of 3x3-foot grids is established at 200 points within an allotment and the different plant species identified in portions of those grids. These studies are usually repeated at 5-year intervals.

1.2.1.2 Buck Hollow Allotment

The Buck Hollow Allotment (#7558) contains 1,028 acres of BLM land and 5,140 acres of private land. There are 2.2 miles of perennial stream, Buck Hollow Creek, and 1.0 miles of intermittent streams on BLM land in this allotment. Buck Hollow Creek provides spawning and rearing habitat for MCR steelhead. Riparian areas on BLM land along Buck Hollow Creek are fenced. The riparian pasture, when grazed, is used in the spring before May 1. Range improvements on this allotment include some gap fencing along the south rim of the Buck Hollow Creek canyon downstream from Bauman Draw. Grazing on BLM land in this allotment is authorized for 131 AUMs. According to the definition provided in Appendix E of the "2000 Grazing Implementation Monitoring Module," BLM lands on this allotment are considered as Group 4 scattered tracts. According to the BA and 2003 monitoring report, monitoring on this allotment consists of a single photo point established in 1994, which includes a step-point survey when a photo is taken.

1.2.1.3 P.J. Conroy Allotment

The P.J. Conroy Allotment (#7512) contains 440 acres of BLM land and 6,400 acres of private land. The BLM portion of this allotment is composed of five scattered tracts containing 1.57 miles of perennial streams, Deep Creek and Cottonwood Creek, which provide spawning and rearing habitat for MCR steelhead. Cottonwood Creek is a tributary to Deep Creek which is a tributary to Bakeoven Creek. Bakeoven Creek enters the Deschutes River near RM 52. There are no range improvements on BLM land in this allotment. Grazing on BLM land in this allotment is authorized for 45 AUMs. In recent years, grazing has occurred in winter and early spring. According to the definition provided in Appendix E of the "2000 Grazing Implementation Monitoring Module," BLM lands on this allotment are considered as Group 4 scattered tracts. According to the BA and 2003 monitoring report, monitoring on this allotment consists of: (1) A single photo point established in 1988, and retaken in 1995 and 1998, which includes a step-point survey when a photo is taken; (2) a continuous water temperature monitoring station in Deep Creek downstream from the allotment; and (3) a riparian transect established on Deep Creek in 2000.

1.2.1.4 Ferry Canyon Allotment

The Ferry Canyon Allotment (#7547) contains 4,782 acres of BLM land and 1,340 acres of private land. The BLM portion of this allotment borders the west side of the mainstem Deschutes River for 3.5 miles, and also contains 1.5 miles of intermittent stream, Ferry Canyon. Ferry Canyon enters the Deschutes River from the west near RM 24.6. This reach of the Deschutes River serves mainly as a migration corridor for MCR steelhead, since it is downstream from the White River. Ferry Canyon may provide spawning habitat for MCR steelhead during high water years. Range improvements on this allotment include a fence constructed along the lower 0.5-mile of Ferry Canyon in 1993 to exclude livestock, and development of three springs as off-channel water sources for livestock. Upper Ferry Canyon is inaccessible to livestock because of steep canyon walls. Grazing has not been authorized on

BLM-administered lands along the Deschutes River in this allotment since 1994. Grazing on BLM land in this allotment is authorized for 226 AUMs. According to the BA and 2003 monitoring report, monitoring on this allotment consists of: (1) Three photo points, one established in 1991, two established in 1998, and a step-point survey conducted at each photo point when photos are taken; (2) two nested frequency study areas; (3) a riparian transect along Ferry Canyon established in 1997; (4) utilization of key forage species study annually along Ferry Canyon; and (5) a continuous water temperature monitoring station established in Ferry Canyon in 1994.

1.2.1.5 C. Forman Allotment

The C. Forman Allotment (#7526) contains 400 acres of BLM land and 2,640 acres of private land. The BLM portion of this allotment contains 0.5 miles of perennial stream (Trout Creek) in two segments, and no intermittent streams. Trout Creek enters the Deschutes River from the east near RM 87 and provides spawning and rearing habitat for MCR steelhead. There are no range improvements on BLM lands in this allotment. Grazing on BLM land in this allotment is authorized for 38 AUMs and usually occurs in the fall. According to the definition provided in Appendix E of the "2000 Grazing Implementation Monitoring Module," BLM lands on this allotment are considered as Group 4 scattered tracts. According to the BA and 2003 monitoring report, monitoring on this allotments consists of one photo point established in 1988, repeated in 1994 and 1998. Step-point survey is conducted at photo points when photos are taken.

1.2.1.6 Holmes Allotment

The Holmes Allotment (#7539) contains 314 acres of BLM land and 2,101 acres of private land. The BLM portion of this allotment contains 0.25 miles of perennial stream, Buck Hollow Creek, and 0.75 miles of intermittent stream, Bronx and Finnegan Canyons. Buck Hollow Creek provides spawning and rearing habitat for MCR steelhead. There is one developed spring on this allotment. Grazing on BLM land in this allotment is authorized for 80 AUMs between November 1 and May 1. According to the definition provided in Appendix E of the "2000 Grazing Implementation Monitoring Module," BLM lands on this allotment are considered as Group 4 scattered tracts. According to the BA and 2003 monitoring report, monitoring on this allotment consists of: (1) A photo point established in 1988, repeated in 1995 and 2000, and step-point surveys conducted when photos are taken; and (2) a riparian transect on Buck Hollow Creek established in 1996.

1.2.1.7 Nartz Allotment

The Nartz Allotment (#7546) contains 80 acres of BLM land and 200 acres of private land. The BLM portion of this allotment contains 0.4 miles of perennial stream, Trout Creek, and no intermittent stream. Trout Creek provides spawning and rearing habitat for MCR steelhead. There are no range improvements on BLM land in this allotment. Grazing on BLM land in this allotment is authorized for 12 AUMs, and has occurred in early spring for the past eight years. According to the definition provided in Appendix E of the "2000 Grazing Implementation

Monitoring Module," BLM lands on this allotment are considered as Group 4 scattered tracts. According to the BA and 2003 monitoring report, monitoring on this allotment consists of: (1) A single upland photo point established in 1988, repeated in 1994, 2000, and 2003; (2) a continuous water temperature recording established in Trout Creek; (3) upstream and downstream photo points every 0.25 miles along Trout Creek in 1980, but not repeated since; and (4) a riparian transect established in 2000.

1.2.1.8 J. Priday Allotment

The J. Priday Allotment (#7560) contains 1,280 acres of BLM land and 4,380 acres of private land. The BLM portion of this allotment contains 1.2 miles of perennial stream (1.0 mile with MCR steelhead), and 1.4 miles of intermittent stream. Trout Creek provides spawning and rearing habitat for MCR steelhead. There are no range improvements on the BLM portion of this allotment. Grazing on BLM land in this allotment is authorized for 100 AUMs, and usually occurs in the spring. According to the definition provided in Appendix E of the "2000 Grazing Implementation Monitoring Module," BLM lands on this allotment are considered as Group 4 scattered tracts. According to the BA and 2003 monitoring report, monitoring on this allotment consists of: (1) A single upland photo point established in 1988, repeated in 1996 and 2000, and includes a step-point survey when photo is taken; (2) a continuous water temperature recording established in Trout Creek in 1994; and (3) upstream and downstream photo points every 0.25 miles along Trout Creek in 1980, but not repeated since.

1.2.1.9 Ward Creek Allotment

The Ward Creek Allotment (#7525) contains 160 acres of BLM land and 160 acres of private land. The BLM portion of this allotment contains 0.25 miles of perennial stream, Ward Creek, and no intermittent streams. Ward Creek is a tributary to Trout Creek and provides spawning and rearing habitat for MCR steelhead. Grazing on BLM land in this allotment is authorized for 8 AUMs. According to the definition provided in Appendix E of the "2000 Grazing Implementation Monitoring Module," BLM lands on this allotment are considered as Group 4 scattered tracts. According to the BA and 2003 monitoring report, monitoring on this allotment consists of: (1) A single photo point established in 1994, repeated in 1997, and includes a step-point survey when photo is taken; (2) a riparian transect established along Ward Creek in 1997; and (3) a continuous recording water temperature station established in Ward Creek in 1994.

1.2.1.10 W.L. Webb Allotment

The W.L. Webb Allotment (#7579) contains 2,978 acres of BLM land in several separate blocks ranging from 40 to 640 acres, and 4,467 acres of private land. The BLM portion of this allotment contains a total of 7.75 miles of perennial stream, 7.0 miles Deschutes River and 0.75 miles Buck Hollow Creek, and 5.7 miles of intermittent streams. The Deschutes River and Buck Hollow Creek provide spawning and rearing habitat for MCR steelhead. There are no range improvements on BLM lands in this allotment. Grazing on BLM land in this allotment is authorized for a total of 242 AUMs and occurs in the spring. According to the BA and 2003

monitoring report, monitoring on this allotment consists of: (1) Two photo points established in 1987, repeated in 1996 and 2000, and includes step-point surveys conducted when photos are taken; and (2) a riparian transect established along Buck Hollow Creek in 1997.

2. ENDANGERED SPECIES ACT

2.1 Biological Opinion

2.1.1 Biological Information

The MCR steelhead evolutionarily significant unit (ESU) was listed as threatened under the ESA by NOAA Fisheries on March 25, 1999 (64 FR 14517). Protective regulations for MCR steelhead were issued under section 4(d) of the ESA on July 10, 2000 (65 FR 42422). Biological information concerning the MCR steelhead is found in Busby *et al.* (1996).

The major drainages in the MCR steelhead ESU are the Deschutes, John Day, Klickitat, Umatilla, Walla Walla, and Yakima River systems. Interim abundance targets for these drainages can be found in Table 3. NOAA Fisheries (2003) has indicated that the 5-year average (geometric mean) abundance of natural return MCR steelhead was up from previous years' basin estimates in the ESU. The Klickitat, Yakima, Touchet, Umatilla and Deschutes systems are all below their interim abundance targets. The John Day is at or above its interim target for abundance. There is significant concern regarding the straying of fish into the Deschutes system from other ESUs. The productivity estimate (λ) of the MCR ESU is approximately 0.98, indicating that the productivity of MCR steelhead is slightly below its target of 1.0. The NOAA Fisheries biological review team (BRT) has determined that the MCR ESU is likely to become endangered because of stock abundance and long-term productivity being depressed within the ESU.

Table 3. Interim abundance targets for the MCR steelhead ESU (adapted from NOAA Fisheries 2003).

ESU/Spawning Aggregations*	Interim Abundance Targets	Interim Productivity Objective
Yakima River		Middle Columbia ESU populations are well below recovery levels. The geometric mean Natural Replacement Rate (NRR) will therefore need to be greater than 1.0
Satus/Toppenish	2,400	
Naches	3,400	
Mainstem (Wapato to Roza)	1,800	
Mainstem (above Roza)	2,900	
Klickitat	3,600	

ESU/Spawning Aggregations*	Interim Abundance Targets	Interim Productivity Objective
Walla-Walla	2,600	
Umatilla	2,300	
Deschutes (Below Pelton Dam Complex)	**6,300**	
John Day		
North Fork	2,700	
Middle Fork	1,300	
South Fork	600	
Lower John Day	3,200	
Upper John Day	2,000	

*Population in bold is addressed in this Opinion

The Pelton-Round Butte (PRB) Hydroelectric Project is a fish passage barrier and has limited MCR steelhead distribution in the Deschutes River Basin to the lower 100 miles of the river. Nehlsen (1995) reviewed historical steelhead runs in the Deschutes River Basin above the PRB Hydroelectric Project and noted that steelhead spawned in major tributaries of the upper Deschutes River above the PRB Project (Squaw Creek and the Crooked River). Historic occurrence of steelhead in the Metolius River is uncertain and equivocal (Northwest Power Planning Council 1990; Lichatowich *et al.* 1998). Steelhead were documented up to 120 miles from the mouth of the Crooked River (Nehlsen 1995).

Spawning and rearing areas for MCR steelhead on BLM lands documented in the BA include various locations along the mainstem Deschutes River, in several tributaries, Bakeoven, Buck Hollow, Bull Run Canyon, Cove, Cottonwood, Deep, Fall Canyon, Ferry Canyon, Jones Canyon, Macks Canyon, Nena, Oak Canyon, Sixteen Canyon, Tenmile, and Trout Creeks, and in the lower two miles of White River. MCR steelhead also incubate, feed, and migrate in these waters. MCR steelhead are suspected but not confirmed to spawn in Ward Creek. Historically, MCR steelhead are thought to have spawned in Bronx Canyon. Based on spawning surveys on the mainstem Deschutes River when water conditions allow, it appears that the majority of steelhead spawning occurs upstream of the White River. From 30 to 60% of the natural steelhead production within the Deschutes Basin occurs in the Deschutes River[4].

According to the BA, MCR steelhead spawn in the mainstem Deschutes River and west side tributaries of the Deschutes River from March through June, while spawning in the east side

[4] Telephone conversation with Steve Pribyl, Oregon Department of Fish and Wildlife (October 9, 2003) (regarding spawning distribution of MCR steelhead in the lower Deschutes River).

tributaries can occur from late January through mid April. ODFW (1997) citing Olsen *et al.* (1991) states that spawning in eastside tributaries may have evolved to an earlier time than westside tributaries or the mainstem because stream flow tends to decrease earlier in the more arid eastside streams. Fry emergence timing depends on time of spawning and water temperature during egg incubation, but usually occurs from late May through June. The ODFW guidelines for the timing of in-water work lists February 1 to March 15 as the preferred in-water work period for the mainstem Deschutes River downstream from Pelton Dam, and July 1 to October 31 as the preferred in-water work period for White River and Buck Hollow, Bakeoven, and Trout Creeks (ODFW 2000). The preferred work period in the mainstem Deschutes is intended to protect fall Chinook salmon and resident rainbow trout in addition to MCR steelhead.

Those MCR steelhead that spawn in the mainstem Deschutes River typically spawn near the downstream ends of islands or on the shallow water side between the island and the streambank. The mean water depth at which 28 MCR steelhead redds were in the mainstem Deschutes River was 54.1 centimeters, mean water velocity over those redds was 71.4 centimeter/second, and mean gravel size in which the redds were constructed was 32.5 mm in diameter (Zimmerman and Reeves 1998). Zimmerman and Reeves (2000) found that steelhead and resident redband segregate spawning habitat in the Deschutes. There was a slight overlap in time of year spawning occurred, but steelhead spawned at night in deeper water with larger substrate at night while redband spawned during the day in shallower water with smaller substrate. By analyzing otolith microchemistry, they also determined that all steelhead sampled in the Deschutes were progeny of steelhead females, and all resident redbands were progeny of resident females. BLM personnel have stated in the past that determining specific locations of steelhead redds in most sections of the mainstem Deschutes River is difficult or impossible during most years because of high flows and turbidity when steelhead are spawning.[5] As a requirement of the 2001 Opinion addressing the Prineville BLM grazing program, BLM personnel attempted to collect information regarding MCR steelhead redd locations in the mainstem Deschutes River during the spring of 2001. In surveys from a boat, walking along the banks, and overlooking potential spawning areas from adjacent hillsides, they found that the ability to count redds using these methods was poor due to high water and associated riparian vegetation. The ODFW has found similar results over the years.[6]

Juvenile MCR steelhead rear throughout the mainstem Deschutes downstream from the Pelton-Round Butte Project. They utilize streamside vegetation as well as stream substrate and other instream structure as cover. Sampling (electrofishing) conducted by Zimmerman and Reeves (1999) in the mainstem Deschutes River found that resident rainbow trout fry (young-of-the-year) outnumbered steelhead fry by a proportion of approximately 9.5 to 1. The proportion of

[5] Telephone Conversation between Ron Lindland, NOAA Fisheries, and Jim Eisner, Fishery Biologist, BLM (June 22, 1999).

[6] Telephone Conversation between Scott Hoefer, NOAA Fisheries, and Steve Pribyl, District Fishery Biologist, ODFW (June 7, 2002).

Age 1+ and older juvenile resident rainbow trout to juvenile steelhead was approximately 9 to 1. Steelhead appear to be opportunistic and in some years ascend small tributaries during short periods of high water to spawn in late winter and spring. Zimmerman and Reeves (1997) found that intermittent tributaries like Tenmile Creek, a Trout Creek tributary, provide important rearing habitat for juvenile steelhead where they do not have to compete with resident rainbow trout. Fry observed in Tenmile Creek were larger than fry found in the Deschutes River. The majority of the juvenile steelhead rear for 2 years before smolting and emigrating to the ocean. However, smolt ages can vary from 1 to 4 years. Steelhead generally rear in the ocean for 2 years before returning to the Deschutes River system as adults to spawn.

The following information was taken from Bureau of Reclamation (2003). Redd counts for Buck Hollow Creek, Bakeoven Creek, and Trout Creek have exhibited an increasing trend from 1990 to 2002 (Table 4). In Buck Hollow Creek, although the same sites were not surveyed every year, early in the time series starting in 1990, redd counts were low, ranging from 8 to 85 from 1990 to 1996; from 1997 to 2002, redd counts increased and ranged from 110 to 445 in 2001. The number of redds decreased to 221 in 2002. If one looks at one site such as the Powerline/Mouth site, the number of redds ranges from 7 in 1994 to 241 in 2001. Overall, the increase in number of redds from 1997 to 2002, compared to the number of redds from 1990 to 1996, seems to indicate an increase in the number of spawning steelhead. In Bakeoven Creek, there was also a low number of redds from 1990 to 1996, with a steady increase from 1997 to 2002, with a high of 480 redds in 2001, followed by a decrease to 214 in 2002. In Trout Creek, starting in 1994, redd numbers per mile are low until 2000, when the number increases dramatically from that seen from 1994 to 1999, reaching a high of 16.3 per mile in 2001, with a decrease to 13.3 in 2002. This is the same temporal pattern of recently increased numbers of redds documented in Buck Hollow and Bakeoven Creeks, although units differ. These counts include redds from both wild and hatchery summer steelhead.

Table 4. Summer steelhead redd counts by year.

Stream	1988	89	90	91	92	93	94	95	96	97	98	99	2000	01	02
Buck Hollow Cr.	N/A	N/A	85	72	34	48	8	69	65	136	179	152	110	445	221
Bakeoven Cr.	N/A	N/A	22	8	9	21	13	20	35	57	68	89	83	480	214
Trout Cr.	23	23	42	16	6	15	0	8	14	50	44	59	461	595	866
Total	**23**	**23**	**149**	**96**	**49**	**84**	**21**	**97**	**114**	**243**	**291**	**300**	**654**	**1520**	**1301**

2.1.2 Evaluating Proposed Action

The standards for determining jeopardy are set forth in section 7(a)(2) of the ESA as defined by 50 CFR Part 402 (the consultation regulations). In conducting analyses of habitat-altering actions under section 7 of the ESA, NOAA Fisheries uses the following steps: (1) Consider the

status and biological requirements of the species; (2) evaluate the relevance of the environmental baseline in the action area to the species' current status; (3) determine the effects of the proposed or continuing action on the species; (4) consider cumulative effects; and (5) determine whether the proposed action, in light of the above factors, is likely to appreciably reduce the likelihood of species survival in the wild. In completing this step of the analysis, NOAA Fisheries determines whether the action under consultation, together with all cumulative effects when added to the environmental baseline, is likely to jeopardize the continued existence of the ESA-listed species.

2.1.3 Biological Requirements

The first step NOAA Fisheries uses when applying ESA section 7(a)(2) to listed steelhead is to define the species' biological requirements that are most relevant to each consultation. NOAA Fisheries also considers the current status of the listed species taking into account population size, trends, distribution and genetic diversity. To assess the current status of the listed species, NOAA Fisheries starts with the determinations made in its decision to list MCR steelhead for ESA protection and also considers new data available that is relevant to the determination.

For this consultation, the relevant biological requirements are improved habitat characteristics that support successful adult and juvenile migration, spawning and rearing. MCR steelhead survival in the wild depends on the proper functioning of certain ecosystem processes, including habitat formation and maintenance. Restoring functional habitats depends largely on allowing natural ecological processes to proceed, while removing adverse impacts of current practices. The current status of the MCR steelhead, based on their risk of extinction, has not significantly improved since the species was listed.

2.1.4 Environmental Baseline

The environmental baseline is an analysis of the effects of past, present, human-related and natural factors leading to the current status of the species and condition of its habitat within the action area. The action area is defined as "all areas to be affected directly or indirectly by the Federal action and not merely the immediate area involved in the action" (50 CFR 402.02).

The action area for this consultation includes: (1) The Deschutes River, Macks Canyon, Sixteen Canyon, and their tributaries within or beside the DRA-administered portions of the Bird Allotment; (2) Buck Hollow Creek and its tributaries within or beside the DRA-administered portions of the Buck Hollow and Holmes Allotments; (3) Deep Creek, Cottonwood Creek, and their tributaries within or beside the DRA-administered portions of the P.J. Conroy Allotment; (4) the Deschutes River, Ferry Canyon, and their tributaries within or beside the DRA-administered portions of the Ferry Canyon Allotment; (5) Trout Creek and its tributaries within or beside the DRA-administered portions of the C. Forman, Nartz, and J. Priday Allotments; (6) Ward Creek and its tributaries within or beside the DRA-administered portions of the Ward Creek Allotment; and (7) the Deschutes River, Buck Hollow Creek, and their tributaries within or beside the DRA-administered portions of the W.L. Webb Allotment. These streams contain spawning, rearing, or migratory habitat for MCR steelhead.

The Lower Deschutes subbasin (downstream from Pelton Dam) covers approximately 2,700 square miles (ODFW 1997). This is equal to approximately 1,728,000 acres. BLM lands on the 10 livestock grazing allotments addressed in this Opinion total approximately 16,304 acres, or 0.9% of the total subbasin area. Table 5 summarizes streams, MCR steelhead use, riparian condition, monitoring results, and 303(d) listings by allotment. Major tributaries within the subbasin include Buck Hollow Creek, the White River, Bakeoven Creek, Wapinitia Creek, the Warm Springs River, Trout Creek, and Shitike Creek.

Environmental baseline conditions within the action area were evaluated for the subject actions at the watershed scale. Streams affected by the DRA grazing program were evaluated in five separate groups as follows: The lower Deschutes River; Buck Hollow Creek and Ferry Canyon; Sixteen Canyon and Macks Canyon; Wapinitia, Cottonwood, and Deep Creeks; and Trout Creek and Ward Creek. The results of this evaluation, based on the "matrix of pathways and indicators" (MPI) described in *Making Endangered Species Act Determinations of Effect for Individual or Grouped Actions at the Watershed Scale* (NOAA Fisheries 1996), follow. This method assesses the current condition of instream, riparian, and watershed factors that collectively provide properly functioning aquatic habitat essential for the survival and recovery of the species.

The environmental baseline conditions for each habitat indicator in the MPI are described in the BA, and incorporated into this Opinion by reference. This method assesses the current condition of instream, riparian, and watershed factors that collectively provide properly functioning aquatic habitat essential for the survival and recovery of the species. An assessment of the key habitat components of MCR steelhead habitat are obtained by using the MPI process to evaluate whether aquatic habitat is properly functioning. Table 5 summarizes habitat ratings.

Table 5. Summary of Lower Deschutes River subbasin conditions in the action area.

MPI Pathways	MPI Indicators[1]	Streams				
		Deschutes River	Buck Hollow & Ferry Canyon	Sixteen & Macks Canyons	Wapintia, Cottonwood & Deep Creeks	Trout & Ward Creeks
Water Quality	Temperature	NPF	NPF	NPF	NPF	NPF
	Sediment	PF	FAR/NPF	FAR/NPF	PF/FAR	NPF
	Chemical Contaminants/ Nutrients	NPF	FAR/NPF	FAR/NPF	FAR	FAR
Access	Physical barriers	NPF	PF	PF	PF	NPF

MPI Pathways	MPI Indicators[1]	Streams				
		Deschutes River	**Buck Hollow & Ferry Canyon**	**Sixteen & Macks Canyons**	**Wapintia, Cottonwood & Deep Creeks**	**Trout & Ward Creeks**
Habitat Elements	Substrate Embeddedness	PF	FAR/NPF	FAR/NPF	PF/FAR	NPF
	Large Woody Debris	PF	NPF	NPF	NPF	NPF
	Pool Frequency	PF	NPF	NPF	NPF FAR (Wapinitia)	NPF
	Pool Quality	PF	FAR/NPF	NPF	PF/FAR	NPF
	Off Channel Habitat	PF	NR	NR	NR	NR
	Refugia	PF	NPF	NPF	PF	NPF
Channel Cond. & Dynamics	Width/depth ratios	PF	NPF	NPF	NR	NR
	Streambank Condition	PF	NPF	NPF	PF/FAR	FAR/NPF
	Floodplain Connectivity	PF	NPF	NPF	PF/FAR	FAR/NPF
Flow/ Hydrol.	Change in Peak Base Flows	PF	NPF	NPF	NPF	NPF
	Increase in Drainage Network	FAR	FAR	FAR	FAR	FAR
Water-shed Condition	Road Density and Location	FAR	PF	FAR	FAR	FAR
	Disturbance History	NR	NR	NR	NR	PF
	Riparian Reserves	NR	NR	NR	NR	NR

[1] The condition of each MPI parameter is indicated in the following manner: PF= properly functioning, FAR= functioning at risk, NPF= not properly functioning, NR=not rated/data unavailable

Deschutes River

Eleven of the 18 habitat indicators in the MPI were rated as "properly functioning" for the Deschutes River. These are: Sediment/turbidity, substrate embeddedness, large woody debris, pool frequency, pool quality, off-channel habitat, refugia, width/depth ratio, streambank condition, floodplain connectivity, and change in peak/base flows. Two of the 18 habitat indicators in the MPI for the Deschutes River were rated as "functioning at risk." These are: Increase in drainage network and road density and location. Three of the 18 indicators for the Deschutes River were rated as "not properly functioning." These are: Temperature, chemical contamination/nutrients, and physical barriers. Two of the 18 indicators for the Deschutes River were not rated. Disturbance history was not rated because data is not available to rate it strictly according to the matrix definition, but it was noted that recreation, grazing, and roads are human disturbances that have affected vegetative composition. Riparian reserves were not rated because a riparian potential assessment has not been completed, but it was noted that riparian condition is adequate to provide habitat protection and connectivity for steelhead. Table 5 summarizes habitat ratings.

Buck Hollow Creek and Ferry Canyon

Two of the 18 habitat indicators in the MPI for Buck Hollow Creek and Ferry Canyon were rated as "properly functioning." These are: Physical barriers and road density and location. One of the 18 habitat indicators in the MPI for Buck Hollow Creek and Ferry Canyon, increase in drainage network, was rated as "functioning at risk." Four of the 18 indicators for Buck Hollow Creek and Ferry Canyon were rated as "functioning at risk" or "not properly functioning." These are: Sediment/turbidity, chemical contamination/nutrients, substrate embeddedness, and pool quality. Eight habitat indicators for Buck Hollow Creek and Ferry Canyon were rated as "not properly functioning." These are: Temperature, large woody debris, pool frequency, refugia, width/depth ratio, streambank condition, floodplain connectivity, and changes in peak/base flows. Three indicators were not rated, including: Off-channel habitat, disturbance history, and riparian reserves. Off-channel habitat was not rated because off-channel areas play an insignificant role in these reaches. Disturbance history was not rated because data is not available to rate it strictly according to the matrix definition, but it was noted that recreation, grazing, and roads are human disturbances that have affected vegetative composition. Riparian reserves were not rated because a riparian potential assessment has not been completed. Table 5 summarizes habitat ratings.

Sixteen Canyon and Macks Canyon

One of the 18 habitat indicators in the MPI for Sixteen Canyon and Macks Canyon, physical barriers, was rated as "properly functioning." Two of 18 habitat indicators in the MPI for Sixteen Canyon and Macks Canyon were rated as "functioning at risk." These are: Increase in drainage network and road density and location. Three of 18 for Sixteen Canyon and Macks Canyon were rated as "functioning at risk or not properly functioning." These are: Sediment/turbidity, chemical contamination/nutrients, and substrate embeddedness. Nine of 18 for Sixteen Canyon and Macks Canyon were rated as "not properly functioning." These are: Temperature, large woody debris, pool frequency, pool quality, refugia, width/depth ratio, streambank condition, floodplain connectivity, and changes in peak/base flows. Three indicators

were not rated, including: Off-channel habitat, disturbance history, and riparian reserves. Off-channel habitat was not rated because off-channel habitat plays an insignificant role in these channels. Disturbance history was not rated because data is not available to rate it strictly according to the matrix definition, but it was noted that recreation, grazing, and roads are human disturbances that have affected vegetative composition. Riparian reserves were not rated because a riparian potential assessment has not been completed. Table 5 summarizes habitat ratings.

Wapinitia Creek, Cottonwood Creek, and Deep Creek

Two of 18 habitat indicators in the MPI for Wapinitia, Cottonwood, and Deep Creeks were rated as "properly functioning." These are: Physical barriers and refugia. Five of the 18 habitat indicators in the MPI for Wapinitia, Cottonwood, and Deep Creeks were rated as "properly functioning or functioning at risk." These are: Sediment/turbidity, substrate embeddedness, pool quality, streambank condition, and floodplain connectivity. Three indicators for Wapinitia, Cottonwood, and Deep Creeks were rated as "functioning at risk." These are: Chemical contamination/nutrients, increase in drainage network, and road density and location. Four habitat indicators for Wapinitia, Cottonwood, and Deep Creeks were rated as "not properly functioning." These are: Temperature, large woody debris, pool frequency (not properly functioning for Cottonwood and Deep Creeks, but functioning at risk for Wapinitia Creek), and change in peak/base flows. Four indicators were not rated, including: Off-channel habitat, width/depth ratio, disturbance history, and riparian reserves. Off-channel habitat was not rated because off-channel areas play an insignificant role in these reaches. Width/depth ratio was not rated because data is not available; however, based on visual observation it is likely that the width/depth ratio for these streams is greater than 12 naturally. Disturbance history was not rated because data is not available to rate it strictly according to the matrix definition, but it was noted that recreation, grazing, and roads are human disturbances that have affected vegetative composition. Riparian reserves were not rated because a riparian potential assessment has not been completed. Table 5 summarizes habitat ratings.

Trout Creek and Ward Creek

None of the 18 habitat indicators in the MPI for Trout Creek and Ward Creek were rated as "properly functioning." Three of 18 habitat indicators in the MPI for Trout Creek and Ward Creek were rated as "functioning at risk." These are: Chemical contamination/nutrients, increase in drainage network, and road density and location. Two indicators for Trout Creek and Ward Creek were rated as "functioning at risk or not properly functioning." These are: Streambank condition and floodplain connectivity. Nine indicators for Trout Creek and Ward Creek were rated as "not properly functioning." These are: Temperature, sediment/turbidity, physical barriers, substrate embeddedness, large woody debris, pool frequency, pool quality, refugia, and change in peak/base flows. Four indicators were not rated, including: Off-channel habitat, width/depth ratio, disturbance history, and riparian reserves. Off-channel habitat was not rated because off-channel areas play an insignificant role in these reaches. Width/depth ratio was not rated because data is not available; however, based on visual observation it is likely that the width/depth ratio for these streams is greater than 12 naturally. Disturbance history was not rated because data is not available to rate it strictly according to the matrix definition, but it was

noted that recreation, grazing, and roads are human disturbances that have affected vegetative composition. Riparian reserves were not rated because a riparian potential assessment has not been completed. Table 5 summarizes habitat ratings.

2.1.4.1 Allotment-Specific Conditions

Bird Allotment

This allotment contains or is beside 4.0 miles of the Deschutes River, which primarily provides migratory and rearing habitat for MCR steelhead since it is below the White River. The Deschutes River in this allotment has been excluded from grazing since the 1980s by a fence constructed in cooperation with ODFW. Riparian condition[7] for the Deschutes River in this allotment was rated good. The allotment also contains or is beside a segment of Sixteen Canyon and approximately 1.6 miles of Macks Canyon. MCR steelhead are known to spawn in Macks Canyon during high water years. Riparian condition for Macks Canyon in this allotment was rated fair with an improving trend. Macks Canyon enters the Deschutes River near RM 23. The mouth of Macks Canyon has been fenced to exclude livestock since 1993, and the watergap on Sixteen Canyon has been closed since 1995. Photos retaken in 2000 at 1991, spring photo points showed greatly improved vegetative conditions likely due to fire, seeding, and a change in grazing strategy. Photo taken in 2003, step-point survey, and nested frequency showed that upland vegetation condition is on an upward trend since 1998. Riparian transects have not been repeated since they were established.

Buck Hollow Allotment

This allotment contains or is beside 2.2 miles of Buck Hollow Creek which provides spawning and rearing habitat for MCR steelhead. Buck Hollow Creek enters the Deschutes River near RM 43. In addition to Trout Creek and Bakeoven Creek, Buck Hollow Creek is one of the primary steelhead-producing tributaries on the east side of the Deschutes River. Buck Hollow Creek has experienced riparian degradation, including channel down cutting, in the past due to excessive season-long grazing. Due to changes in management over the last decade, primarily a switch to winter and early spring grazing, riparian conditions on these streams are improving. Recently, there has been a substantial increase in the amount of riparian vegetation. Photo taken in 2001, and step-point survey showed that upland vegetation condition has been static since 1994.

P.J. Conroy Allotment

This allotment contains 0.7 miles of Deep Creek and 0.9 miles of Cottonwood Creek which provide steelhead spawning and rearing habitat. Riparian condition for Deep Creek was rated fair to good, and riparian condition for Cottonwood Creek was rated poor to fair. Cottonwood Creek is a tributary to Deep Creek which is a tributary to Bakeoven Creek. Bakeoven Creek enters the Deschutes River near RM 52. As mentioned above, Bakeoven Creek is one of the primary steelhead-producing tributaries on the east side of the Deschutes River. Photo taken in

[7] In the BA, riparian conditions were rated poor, fair, good, or excellent. "Poor" riparian condition means that the vegetation is in early seral stage, "fair" is in early to mid-seral, "good" is in mid-seral, and "excellent" is in mid- to late seral.

1998, and step-point survey showed that upland vegetation condition was static between 1995 and 1998. Riparian transect has not been repeated since it was established in 2000.

Ferry Canyon Allotment

This allotment contains or is beside 3.5 miles of the Deschutes River and 1.5 miles of Ferry Canyon. This portion of the Deschutes River primarily provides migratory and rearing habitat for steelhead since it is below the White River. Riparian condition on the portion of the Deschutes River in this allotment was rated good. Ferry Canyon is an intermittent stream that enters the Deschutes River from the west near RM 24.6. Ferry Canyon may provide spawning habitat for MCR steelhead during high water years. Ferry Canyon's riparian condition in this allotment was rated excellent. The lower portion of Ferry Canyon has been excluded from livestock use by fencing and contains excellent vegetative diversity. Livestock are excluded from the upper portion of Ferry Canyon by steep canyon walls, and the riparian area along this reach is in excellent condition. Photo taken in 2003, step-point survey, and nested frequency showed that upland vegetation condition has been static since 1998. Riparian transect has not been repeated since it was established in 1997.

C. Forman Allotment

There are 0.5 miles of Trout Creek on the DRA land within the allotment. Trout Creek enters the Deschutes River from the east near RM 87. Trout Creek provides spawning and rearing habitat for MCR steelhead. Trout Creek riparian condition in this allotment was rated good. As mentioned above, Trout Creek is one of the primary steelhead-producing tributaries on the east side of the Deschutes River. Photo taken in 1998, and step-point survey showed that upland vegetation condition was on an upward trend between 1994 and 1998.

Holmes Allotment

This allotment contains 0.25 miles of Buck Hollow Creek, a perennial stream providing spawning and rearing habitat for MCR steelhead, and 0.75 miles of intermittent stream (Bronx and Finnegan Canyons). As discussed above, Buck Hollow Creek is one of the primary steelhead-producing tributaries on the east side of the Deschutes River. Buck Hollow Creek has experienced riparian degradation, including channel down cutting, in the past due to excessive season-long grazing. Due to changes in management over the last decade, primarily a switch to winter and early spring grazing, riparian conditions on this stream are improving. Recently, there has been a substantial increase in the amount of riparian vegetation. Photo taken in 2000, and step-point survey showed that upland vegetation condition was on an upward trend between 1995 and 2000. The riparian transect has not been repeated since it was established in 1996.

Nartz Allotment

The BLM portion of this allotment contains 0.4 miles of perennial stream, Trout Creek, and no intermittent streams. Trout Creek provides spawning and rearing habitat for MCR steelhead. Trout Creek enters the Deschutes River near RM 87. Riparian condition of Trout Creek in this allotment was rated fair to good and improving. As mentioned above, Trout Creek is one of the primary steelhead-producing tributaries on the east side of the Deschutes River. Photo taken in

2003, showed that upland vegetation condition has been static since 2000. Riparian transect has not been repeated since it was established in 2000.

J. Priday Allotment
The BLM portion of this allotment contains 1.2 miles of perennial stream, Trout Creek, and 1.4 miles of intermittent stream. Riparian condition of Trout Creek in this allotment was rated good. Photo taken in 2000, and step-point survey showed that upland vegetation condition was static between 1996 and 2000.

Ward Creek Allotment
The BLM portion of this allotment contains a total of 0.25 miles of perennial stream, Ward Creek, and no intermittent streams. Ward Creek is a tributary to Trout Creek. Ward Creek provides spawning and rearing habitat for MCR steelhead. Riparian condition of Ward Creek in this allotment was rated fair. Photo taken in 1998, and step-point survey showed that upland vegetation condition was on a downward trend between 1994 and 1998. The riparian transect has not been repeated since it was established in 1997.

W.L. Webb Allotment
The BLM portion of this allotment contains a total of 7.75 miles of perennial stream (7.0 miles Deschutes River and 0.75 miles Buck Hollow Creek), and 5.7 miles of intermittent streams. The Deschutes River and Buck Hollow Creek provide spawning and rearing habitat for MCR steelhead. Riparian condition for the Deschutes River in this allotment was rated as good. As discussed above, Buck Hollow Creek is one of the primary steelhead-producing tributaries on the east side of the Deschutes River. Buck Hollow Creek has experienced riparian degradation, including channel down cutting, in the past due to excessive season-long grazing. Due to changes in management over the last decade, primarily a switch to winter and early spring grazing, riparian conditions on this stream are improving. Recently, there has been a substantial increase in the amount of riparian vegetation. Photo taken in 2000, and step-point survey showed that upland vegetation condition was static between 1996 and 2000. The riparian transect has not been repeated since it was established in 1997.

2.1.5 Analysis of Effects

The effects determination in this Opinion was made using a method for evaluating current aquatic conditions, the environmental baseline, and predicting effects of actions on them. The effects of actions are expressed in terms of the expected effect (restore, maintain, or degrade) on aquatic habitat elements and indicators in the action area.

2.1.5.1 LAA Allotments

Impacts of livestock grazing on stream habitat and fish populations can be separated into direct and indirect effects. Direct effects are those which contribute to the immediate loss or harm to individual fish or embryos (*e.g.*, stepping on a fish, trampling a redd that results in the actual destruction of embryos, dislodging the embryos from the protective nest and ultimately

destroying eggs). Indirect effects are those impacts which occur at a later time, causing loss of specific habitat features (*e.g.*, undercut banks, sedimentation of spawning beds), localized reductions in habitat quality (*e.g.*, sedimentation, loss of riparian vegetation, changes in channel stability and structure), and, ultimately, cause loss or reductions of entire populations of fish, or widespread reductions in habitat quantity and/or quality.

All of the DRA allotments incorporate a winter, early-spring grazing strategy. Based on plant phenology, the only grazing strategies generally considered to have a good chance of rehabilitating degraded streams and riparian areas are light or tightly controlled uses such as winter-only grazing or riparian pastures with short, early-spring use periods (Platts 1991). Studies (Leonard *et al.* 1997, Ehrhart and Hanson 1997, and Kinch 1989) have shown that cattle are less likely to concentrate on riparian areas during spring months because of flooding and because water and herbaceous vegetation is readily available in upland areas away from streams. Myers (1989) concluded that good or excellent riparian conditions were maintained by grazing systems which lacked livestock use during the hot season, and recommended grazing not be allowed during the hot summer months more than once every four years. Similarly, Clary and Webster (1989) stated grazing should be avoided during mid and late summer and recommend early grazing, followed by complete removal of livestock. Early grazing allows significant herbaceous regrowth to occur in riparian areas, reducing most grazing damage before higher flows occur the following spring or summer, and avoids impacts on woody plant species when livestock forage preference shifts occur. Riparian impacts associated with winter/early-spring grazing strategies have been documented, and vary based on site-specific conditions (Leonard *et al.* 1997, Erhart and Hansen 1997, Elmore and Kauffman 1994). On some soils when moisture content is high, cattle more easily uproot plants, compact soils, and shear streambanks (Leonard *et al.* 1997). Winter may be the time of greatest browse of woody species by both livestock and wildlife (Leonard *et al.* 1997, Erhart and Hansen 1997). Based on site visits to these allotments it appears that most habitat impacts are associated with stream crossings and watering areas, so direct effects are of greatest concern.

Direct Effects on MCR Steelhead

Direct effects of livestock grazing may occur when livestock enter streams occupied by MCR steelhead to loaf, drink, or cross the stream. During the early phases of their life cycle, MCR steelhead are largely immobile, and large numbers of embryos or young are concentrated in small areas. Livestock entering fish-spawning areas can trample redds and destroy or dislodge embryos and alevins. Belsky *et al.* (1997) review these direct influences on stream and riparian areas. Wading in streams by livestock can be assumed to induce mortality on eggs and pre-emergent fry at least equal to that demonstrated for human wading (Roberts and White 1992). In this investigation, a single wading incident on a simulated spawning bed induced 43% mortality of pre-hatching embryos. In a recent (July 12, 2000) occurrence of unauthorized livestock grazing in the Sullens Allotment on the Malheur National Forest, five out of five documented MCR steelhead redds in a meadow area of a Rosgen C-type stream channel in Squaw Creek (Middle Fork JDR subbasin) were trampled by cattle (U.S. Forest Service memorandum, August 17, 2000).

Direct impacts on MCR steelhead spawning areas can be avoided by scheduling grazing in pastures containing spawning habitat to occur after July 15, or by excluding known spawning areas from livestock access. The period during which spawning MCR steelhead adults may be susceptible to harassment, or eggs and pre-emergent fry susceptible to trampling by livestock, is from February 15 to July 15 in the Lower Deschutes subbasin streams. In some allotments or pastures, there are pre-existing natural topographic, geologic, and vegetative features, or high spring water flows that naturally exclude or minimize livestock use from spawning areas. The likelihood of redd trampling is reduced by removing cattle from all of the allotments by May 1st, when temperatures are still cool enough that cows are not concentrating in riparian areas. In addition, the DRA completes redd surveys that include monitoring for trampling on all steelhead spawning streams. Other forms of direct take (*i.e.*, harassment of MCR steelhead by livestock when livestock enter or are beside occupied habitat, resulting in MCR steelhead behavioral modifications) are more difficult to address. Rangeland management that results in better riparian and in-channel habitat conditions, and creates more cover and other important habitat features conducive to MCR steelhead survival and recovery can reduce direct take in the form of harassment.

Cattle wading into a stream to loaf, drink, or cross the stream have the potential to frighten juvenile MCR steelhead from streamside cover. Once these juveniles are frightened from cover and swim into open water, they become more susceptible to predation. However, NOAA Fisheries believes that the risk of mortality of juvenile salmonids due to flushing from cover by watering cattle is minimal.

Direct and Indirect Effects on MCR Steelhead Habitat

The DRA incorporates a winter, early-spring grazing strategy on each of the 10 allotments covered by this Opinion. Cattle do not concentrate in riparian areas during these times because upslope vegetation is more palatable than riparian vegetation, temperatures are generally cool with mid-slopes being warmer than valley bottoms, and flooding results from higher flows in streams. As a result, riparian impacts are generally minimal. This has been observed during multiple NOAA Fisheries site visits to BLM allotments in the Lower John Day subbasin and Lower Deschutes subbasin where spring grazing strategies are incorporated. Four grazing allotments in 2003, and one in March 2004, were visited on the Central Oregon Resource Area in the Lower John Day subbasin, and riparian condition was excellent in each of them. Streambanks were stable, vegetation was healthy, hardwoods were abundant or at least becoming reestablished, and stream channels appeared to be narrowing. The DRA Delude, Criterion, and Frog Springs Allotments were visited during the 2003 float trip described in this document's introduction. The riparian vegetation and streambanks within these allotments were in excellent condition with almost no evidence of grazing. In April 2001, NOAA Fisheries staff visited Buck Hollow Creek on the Buck Hollow Allotment with the DRA staff. It was apparent that Buck Hollow Creek had down cut in the past, but the stream was rebuilding its floodplain. Sedges and rushes were reestablished and functioning to stabilize streambanks and capture fine sediment, and the channel appeared to be narrowing.

Although cattle do not concentrate in riparian areas under a winter, early-spring grazing strategy, there are some minor effects that result from cattle accessing the stream to drink or cross. Cattle often access or cross streams in the same locations repeatedly, which results in a trail of bare soil and can cause bank sloughing at the access point. When soil is bare, surface erosion can result in delivery of fine sediments to the stream during rain events, or the cattle disturbing bare soil when approaching a stream to drink or cross may deliver fine sediments to the stream. However, since the area of bare soil associated with watering and crossing sites is small, NOAA Fisheries believes that the risk of incidental take occurring due to increased sedimentation at these sites is minimal.

Livestock indirectly affect plant species composition in riparian areas by aiding the dispersal and establishment of nonnative species, as seeds may be carried on the fur or in the dung of livestock (Fleischner 1994). The presence of nonnative species, especially invasive and highly competitive weed species such as knapweeds and thistles, can disrupt the natural functions of riparian areas.

2.1.5.2 Minimizing Effects from LAA Livestock Grazing

With the implementation of PACFISH in 1995, management programs were put in place to protect and enhance riparian areas in the Deschutes River Basin. In an effort to avoid adverse effects that can result from improper livestock grazing, the DRA has made many adjustments to their range program. The primary adjustment has been a change from a season-long grazing strategy to a winter, early spring grazing strategy. This is an effective technique to speed recovery and protect riparian areas from damage from livestock grazing. According to the BA, the majority of the perennial streams on the DRA-administered livestock grazing allotments are showing improving trends in grass, shrub growth, vigor, and streambank stability. These trends are noted primarily through general observation.

On April 14, 2000, a USFS/BLM memorandum transmitted the "Interagency Implementation Team (IIT) 2000 Grazing Implementation Monitoring Module" to the DRA and other BLM resource areas in Oregon and National Forests. The DRA implementation monitoring in the Lower Deschutes subbasin has been limited to monitoring unauthorized use. The 2003 DRA monitoring report states that stubble height, use of woody vegetation, and bank damage due to grazing are not measured, because the late-winter, early-spring grazing strategies do not impact riparian habitat. Healthy overall riparian conditions were observed in the Delude, Criterion, and Frog Springs Allotments along the Deschutes River during the June 2003 monitoring float trip, but there are some minor impacts associated with stream crossings on tributaries and watering areas on tributaries and the Deschutes River.

2.1.5.3 LAA Allotment-Specific Effects

Bird, Ferry Canyon, Nartz, J. Priday, Ward Creek, Buck Hollow, Holmes, and W.L. Webb Allotments

Grazing will occur in the riparian pastures of these allotments before May 1st. MCR steelhead spawning occurs in Macks Canyon (Bird) in high water years, potentially in Sixteen Canyon (Bird) and Ferry Canyon (Ferry Canyon) in high water years, Trout Creek (Nartz, J. Priday), Ward Creek (Ward Creek), and Buck Hollow Creek (Buck Hollow, Holmes, W.L. Webb). There is a potential for interference with MCR steelhead spawning and/or redd trampling in these allotments. Since the allotments are grazed in the spring, riparian condition should continue to improve.

P.J. Conroy and C. Forman Allotments

Grazing will occur on these allotments between November 1st and May 1st. MCR steelhead spawning occurs in Deep Creek (P.J. Conroy), potentially Cottonwood Creek (P.J. Conroy), and Trout Creek (C. Forman). There is a potential for interference with MCR steelhead spawning and/or redd trampling in these allotments. Since these allotments are grazed in winter and early spring, riparian condition should continue to improve.

2.1.5.5 Summary of Effects

Spring grazing in areas where MCR steelhead spawn has the potential to result in incidental take associated with redd trampling and bank sloughing where cattle access the stream. NOAA Fisheries believes that since cattle do not concentrate in riparian areas during winter and early spring grazing and are removed from all allotments by May 1st, appropriate monitoring of redds for trampling and adapting management, as identified in the incidental take statement, through moving or excluding cattle in response to trampling is sufficient to keep trampling associated take to a minimum.

2.1.6 Cumulative Effects

"Cumulative effects" are defined in 50 CFR 402.02 as those effects of "future State or private activities, not involving Federal activities, that are reasonably certain to occur within the action area of the Federal action subject to consultation." The "action area" for this consultation is identified in section 2.1.4 of this Opinion.

The only known state or private activities that are reasonably certain to occur within the action area are future grazing and agricultural activities on private land within the action area. Significant improvement in MCR steelhead reproductive success outside of federally-administered land is unlikely without changes in grazing, agricultural, and other practices occurring within non-federal riparian areas in the Deschutes Basin. Until improvements in non-federal land management practices are actually implemented, NOAA Fisheries assumes that future private and state actions will continue at similar intensities as in recent years and as a result will maintain degraded MCR steelhead habitat conditions on non-federal land.

2.1.7 Conclusion

The standards for determining jeopardy are set forth in section 7(a)(2) of the ESA as defined by 50 CFR Part 402 (the consultation regulations). NOAA Fisheries must determine whether the action is likely to jeopardize the listed species by determining if the species can be expected to survive with an adequate potential for recovery. In making this determination, NOAA Fisheries must consider the estimated level of mortality attributable to: (1) Collective effects of the proposed or continuing action; (2) the environmental baseline; and (3) any cumulative effects.

NOAA Fisheries has determined that, when the effects of the subject actions addressed in this Opinion are added to the environmental baseline and cumulative effects occurring in the action area, they are not likely to jeopardize the continued existence of MCR steelhead. These conclusions were reached primarily because: (1) Relevant aquatic habitat indicators on the DRA-administered livestock grazing allotments along the mainstem Deschutes River and tributaries addressed in this Opinion are expected to be maintained or restored under current grazing regimes and monitoring strategies; (2) site visits and monitoring information indicate that implementation of spring grazing strategies have resulted in improvement in riparian vegetation conditions on some allotments; (3) although available data shows that some trampling of MCR steelhead redds may occur, and the percentage of redds potentially trampled can be high in certain channel types (meadow areas, C-type stream channels), removal of cattle from all allotments by May 1st, completing steelhead redd surveys, and improvements in riparian condition resulting from improved livestock management on the DRA-administered livestock grazing allotments containing or beside MCR steelhead spawning areas are expected to minimize the number of redds trampled by livestock; and (4) due to improvements in riparian vegetation, stream shading, and streambank stability (in many areas), aquatic habitat indicators such as water temperature, sediment, substrate embeddedness, width/depth ratio, and streambank condition are expected to be improved and restored over the long term on lower Deschutes River tributary streams. In reaching these conclusions, NOAA Fisheries has used the best scientific and commercial data available as documented herein and by the BA describing the Federal actions.

2.1.8 Conservation Recommendations

Section 7 (a)(1) of the ESA directs Federal agencies to utilize their authorities to further the purposes of the ESA by carrying out conservation programs for the benefit of the threatened and endangered species. Conservation recommendations are discretionary measures suggested to minimize or avoid adverse effects of a proposed action on listed species or to develop additional information. NOAA Fisheries believes that the following conservation recommendations regarding livestock grazing should be implemented:

1. The DRA should review the range improvement budget annually, and give top priority to restoring riparian areas along streams containing MCR steelhead habitat by development of off-channel water sources and cattle-exclusion devices.

2. The DRA should work with adjacent private land owners to facilitate BLM access for necessary monitoring of grazing management practices and ecological conditions.

3. When unauthorized[8] or excess[9] use by livestock occurs on BLM land in areas providing MCR steelhead habitat, the DRA should notify the owner of the cattle and request removal of the livestock immediately. The BLM should use any and all administrative and law enforcement capabilities to remove the livestock as soon as possible. NOAA Fisheries Habitat Conservation Division would also like to be notified of these cases.

For NOAA Fisheries to be kept informed of actions minimizing or avoiding adverse effects, or those that benefit listed salmon and steelhead or their habitats, we request notification of the achievement of any conservation recommendations when the DRA submits its annual report describing achievements of the fish monitoring program during the previous year.

2.1.9 Reinitiation of Consultation

Reinitiation of consultation is required if: (1) The action is modified in a way that causes an effect on the listed species that was not previously considered in the BA or this Opinion; (2) new information or project monitoring reveals effects of the action that may affect the listed species in a way not previously considered (*e.g.,* excessive riparian impacts); (3) a new species is listed or critical habitat is designated that may be affected by the action; or (4) the amount or extent of take specified in the Incidental Take Statement is exceeded (50 CFR. 402.16). In addition, if MCR steelhead redd trampling is observed in any allotment, reinitiation is necessary for that allotment only. If redd trampling is observed, consultation should be be reinitiated before the subsequent grazing season. This consultation does not cover any grazing after 2008. To reinitiate consultation, the DRA should contact the NOAA Fisheries Habitat Conservation Division, Oregon State Habitat Office, and refer to: **2004/00198** (for LAA actions) or **2004/00508** (for NLAA actions).

2.2 Incidental Take Statement

The ESA at section 9 [16 USC 1538] prohibits take of endangered species. The prohibition of take is extended to threatened anadromous salmonids by section 4(d) rule [50 CFR 223.203]. Take is defined by the statute as "to harass, harm, pursue, hunt, shoot, wound, kill, trap, capture, or collect, or to attempt to engage in any such conduct." [16 USC 1532(19)] Harm is defined by regulation as "an act which actually kills or injures fish or wildlife. Such an act may include significant habitat modification or degradation which actually kills or injures fish or wildlife by

[8] Unauthorized use is any incident whereby livestock owned by a non-permittee enter onto the Federal lands.

[9] Excess use is any incident whereby livestock owned by a permittee holding a grazing permit are found in areas or at times other than shown on the grazing permit or otherwise authorized under a bill for collection. NOAA Fisheries also considers use by greater numbers of cattle than allowed by the grazing permit to be excess use.

significantly impairing essential behavior patterns, including, breeding, spawning, rearing, migrating, feeding or sheltering." [50 CFR 222.102] Harass is defined as "an intentional or negligent act or omission which creates the likelihood of injury to wildlife by annoying it to such an extent as to significantly disrupt normal behavior patterns which include, but are not limited to, breeding, feeding, or sheltering." [50 CFR 17.3] Incidental take is defined as "takings that result from, but are not the purpose of, carrying out an otherwise lawful activity conducted by the Federal agency or applicant." [50 CFR 402.02] The ESA at section 7(o)(2) removes the prohibition from any incidental taking that is in compliance with the terms and conditions specified in a section 7(b)(4) incidental take statement [16 USC 1536].

An incidental take statement specifies the impact of any incidental taking of endangered or threatened species. It also provides reasonable and prudent measures that are necessary to minimize impacts and sets forth terms and conditions with which the action agency must comply to implement the reasonable and prudent measures.

2.2.1 Amount or Extent of Take

NOAA Fisheries anticipates that the subject grazing actions covered by this Opinion are reasonably certain to result in incidental take of MCR steelhead. Some level of incidental take is expected to result from livestock grazing due to surface erosion from cattle trails and banks sloughing under hooves, the potential for cattle to trample MCR steelhead redds, disturbance of spawning adult steelhead, or frightening of juvenile MCR steelhead from cover by livestock wading in streams. Incidental take is limited to allotments covered under this consultation. Because of the inherent biological characteristics of aquatic species such as MCR steelhead, the likelihood of discovering take attributable to these actions is very small. Effects of actions such as those addressed in this Opinion are largely unquantifiable in the short term, and may not be measurable as long-term effects on the species' habitat or population levels. Therefore, even though NOAA Fisheries expects some incidental take to occur due to the actions covered by this Opinion, the best scientific and commercial data available are not sufficient to enable NOAA Fisheries to estimate a specific amount of incidental take of listed fish at any life stage. The extent of take is limited to portions of the Deschutes River, Macks Canyon, Sixteen Canyon, Buck Hollow Creek, Deep Creek, Cottonwood Creek, Ferry Canyon, Trout Creek, Ward Creek, and tributaries associated with the ten DRA grazing allotments addressed in this consultation.

2.2.2 Effect of the Take

In this Opinion, NOAA Fisheries has determined that the level of anticipated take is not likely to result in jeopardy to MCR steelhead.

2.2.3 Reasonable and Prudent Measures

NOAA Fisheries believes the following reasonable and prudent measures are necessary and appropriate to minimize the likelihood of take of MCR steelhead resulting from the actions covered in this Opinion. The DRA shall:

1. Minimize the likelihood of incidental take resulting from livestock grazing and associated activities by managing livestock grazing allotments such that direct effects of livestock on spawning adult MCR steelhead, steelhead eggs, and pre-emergent fry in streams on or beside those allotments are avoided or minimized.

2. Minimize the likelihood of incidental take resulting from livestock grazing and associated activities by managing livestock grazing allotments such that direct and indirect effects of livestock on important components of MCR steelhead habitat are avoided or minimized.

3. Complete a comprehensive monitoring and reporting program to ensure implementation of conservation measures found in this Opinion.

2.2.4 Terms and Conditions

To be exempt from the prohibitions of section 9 of the ESA, the DRA must comply with the following terms and conditions, which implement the reasonable and prudent measures described above. These terms and conditions are non-discretionary.

1. To implement reasonable and prudent measure #1 (direct effects of livestock on spawning adult MCR steelhead, steelhead eggs, and pre-emergent fry), the DRA shall:

    a. Develop and implement an incidental take monitoring program that samples select MCR steelhead spawning areas biweekly from the time of redd construction to emergence or the removal of cattle from the pasture, to provide data demonstrating that cattle under the current grazing strategy are not trampling MCR steelhead redds.
    b. Monitor incidental take of MCR steelhead associated with cattle grazing by visiting all known spawning reaches within range allotments at least once during late March or early April each year, or as adjusted for run timing.
    c. Monitor incidental take of MCR steelhead associated with cattle grazing by visiting suspected spawning reaches of Sixteen Canyon, Cottonwood Creek, Ferry Canyon, and Ward Creek within range allotments at least once during late March or early April each year, or as adjusted for run timing.
    d. If redd trampling is observed in any pasture, minimize take of MCR steelhead by protecting MCR steelhead redds observed within 20 feet of cattle watering sites or stream crossings within that pasture by controlling cattle access to redds until cattle are removed from the pasture or emergence has occurred. Reinitiate consultation following the grazing season that trampling is observed per section 2.1.9 of this Opinion.
    e. If redd trampling is observed in any pasture, increase monitoring frequency, for the remainder of that season, on all known or suspected spawning reaches to biweekly until cattle are removed or emergence occurs.

2. To implement reasonable and prudent measure #2 (direct and indirect effects of livestock on important components of MCR steelhead habitat), the DRA shall:

   a. Consistently implement grazing-related standards and guidelines listed in PACFISH to achieve RMOs regarding bank stability, water temperature, large woody material, lower bank angle, width/depth ratio, and other aquatic habitat parameters which may be affected by livestock grazing.
   b. To ensure that indirect riparian vegetation effects due to authorized livestock grazing do not exceed those described in this Opinion, monitor riparian vegetation trend using data from riparian transect studies implemented according to the schedule in Table 6. If the trend is static in riparian areas not at desired condition or downward, additional monitoring (*e.g.*, willow use) will be conducted to isolate the cause.

      Table 6. Riparian transect schedule for Lower Deschutes River subbasin LAA allotments.

Allotment	Pasture	Stream	Transect Monitored
Bird	Macks Canyon	Macks Canyon	2008
	Sixteen Canyon	Sixteen Canyon	2004
P.J. Conroy	Unnamed	Deep Creek	2006
Ferry Canyon	Riparian	Ferry Canyon	2008
Holmes	Creek	Buck Hollow Creek	2005
Nartz	Unnamed	Trout Creek	2007
Ward Creek	Unnamed	Ward Creek	2007
W.L. Webb	River	Buck Hollow Creek	2005

   c. Meet all requirements and fully implement the 2000 Grazing Implementation Monitoring Module, 2002 amendments to the module, and the piloted Effectiveness Monitoring Module.

3. To implement reasonable and prudent measure #3 (monitoring and reporting), the DRA shall:

   a. Provide an end-of-year report to NOAA Fisheries by December 1 of each year. The following shall be included in the report for each allotment:
      i. Overview of proposed action and actual management (livestock numbers, on-off dates for each pasture, and strategy);
      ii. specific DRA implementation monitoring data, date, and location collected;

iii. results from all riparian transects;
iv. most recent photos documenting trend at riparian photo points;
v. spawning survey results;
vi. specific permittee monitoring data;
vii. review of management and compliance successes and failures and any transmittals/letters/actions addressed to/from permittees;
viii. new habitat trend or MCR steelhead population data;
ix. compliance with each pertinent term and condition contained in this Opinion; and
x. management recommendations for subsequent years.

b. Provide an end-of-year grazing tour in the fall with NOAA Fisheries. The tour's purpose is to review successes and failures of the current year's grazing activities and develop recommendations for future activities. A summary of the grazing tour will be provided in the end-of-year report.

c. Review the adequacy of the monitoring program for determining riparian condition trends, focusing specifically on the frequency of monitoring and types of monitoring used to insure that monitoring results adequately document that indirect effects do not rise to the level of incidental take.

d. Send the completed report to:

National Marine Fisheries Service
Oregon State Habitat Office
Attn: Scott Hoefer, 2004/00198
525 NE Oregon Street
Portland, OR 97232

e. NOTICE. If a dead, injured, or sick endangered or threatened species specimen is found, initial notification must be made to the National Marine Fisheries Service Law Enforcement Office, at Vancouver Field Office, 600 Maritime, Suite 130, Vancouver, Washington 98661; phone: 360.418.4246. Care should be taken in handling sick or injured specimens to ensure effective treatment and care or the handling of dead specimens to preserve biological material in the best possible state for later analysis of cause of death. Besides the care of sick or injured endangered and threatened species, or preservation of biological materials from a dead animal, the finder has the responsibility to carry out instructions provided by Law Enforcement to ensure that evidence with the specimen is not unnecessarily disturbed.

3. MAGNUSON-STEVENS FISHERY CONSERVATION AND MANAGEMENT ACT

3.1 Background

The Magnuson-Stevens Fishery Conservation and Management Act (MSA), as amended by the Sustainable Fisheries Act of 1996 (Public Law 104-297), requires the inclusion of EFH descriptions in Federal fishery management plans. In addition, the MSA requires Federal agencies to consult with NOAA Fisheries on activities that may adversely affect EFH.

EFH means those waters and substrate necessary to fish for spawning, breeding, feeding, or growth to maturity (MSA section 3). For the purpose of interpreting the definition of essential fish habitat: "Waters" include aquatic areas and their associated physical, chemical, and biological properties that are used by fish, and may include aquatic areas historically used by fish where appropriate. "Substrate" includes sediment, hard bottom, structures underlying the waters, and associated biological communities. "Necessary" means the habitat required to support a sustainable fishery and the managed species' contribution to a healthy ecosystem, and "spawning, breeding, feeding, or growth to maturity" covers a species' full life cycle (50 CFR 600.110).

Section 305(b) of the MSA (16 U.S.C. 1855(b)) requires that:

- Federal agencies must consult with NOAA Fisheries on all actions, or proposed actions, authorized, funded, or undertaken by the agency, that may adversely affect EFH;

- NOAA Fisheries shall provide conservation recommendations for any Federal or state activity that may adversely affect EFH;

- Federal agencies shall within 30 days after receiving conservation recommendations from NOAA Fisheries provide a detailed response in writing to NOAA Fisheries regarding the conservation recommendations. The response shall include a description of measures proposed by the agency for avoiding, mitigating, or offsetting the impact of the activity on EFH. In the case of a response that is inconsistent with the conservation recommendations of NOAA Fisheries, the Federal agency shall explain its reasons for not following the recommendations.

The MSA requires consultation for all actions that may adversely affect EFH, and does not distinguish between actions within EFH and actions outside EFH. Any reasonable attempt to encourage the conservation of EFH must take into account actions that occur outside EFH, such as upstream and up slope activities, that may have an adverse effect on EFH. Therefore, EFH consultation with NOAA Fisheries is required by Federal agencies undertaking, permitting or funding activities that may adversely affect EFH, regardless of its location.

3.2 Identification of EFH

The Pacific Fisheries Management Council (PFMC) has designated EFH for federally-managed fisheries within the waters of Washington, Oregon, and California. The PFMC has designated EFH for three species of Pacific salmon: Chinook salmon (*O. tshawytscha*); coho (*O. kisutch*); and Puget Sound pink salmon (*O. gorbuscha*) (PFMC 1999). Freshwater EFH for Pacific salmon includes all those streams, lakes, ponds, wetlands, and other waterbodies currently, or historically accessible to salmon in Washington, Oregon, Idaho, and California, except areas upstream of certain impassable man-made barriers (as identified by the PFMC), and longstanding, naturally-impassable barriers (*i.e.*, natural waterfalls in existence for several hundred years). In estuaries and marine areas, designated salmon EFH extends from the near shore and tidal submerged environments within state territorial waters out to the full extent of the exclusive economic zone (370.4 km) offshore of Washington, Oregon, and California north of Point Conception to the Canadian border. Detailed descriptions and identifications of EFH for salmon are found in Appendix A to Amendment 14 to the *Pacific Coast Salmon Plan* (PFMC 1999). Assessment of potential adverse effects on these species' EFH from the proposed action is based on this information.

3.3 Proposed Actions

The proposed action is detailed in section 1.2 of this document. The action area is identified in section 2.1.4 of the ESA portion of this document. These areas within the Lower Deschutes subbasin have been designated as EFH for various life stages of Chinook salmon and coho salmon.

3.4 Effects of Proposed Action

As described in detail in the ESA portion of this consultation**,** the proposed activities may result in detrimental short-term adverse effects resulting from cattle accessing streams to cross or water.

3.5 Conclusion

NOAA Fisheries believes that the proposed action will adversely affect EFH for Chinook and coho salmon.

3.6 EFH Conservation Recommendations

Pursuant to section 305(b)(4)(A) of the MSA, NOAA Fisheries is required to provide EFH conservation recommendations for any Federal or state agency action that would adversely affect EFH. The conservation measures proposed for the project by the DRA, reasonable and prudent measure 2 and 3, and term and condition 2 and 3 contained in sections 2.2.3 and 2.2.4 are applicable to salmon EFH. Therefore, NOAA Fisheries incorporates each of those measures here as EFH conservation recommendations.

3.7 Statutory Response Requirement

Please note that the MSA (section 305(b)) and 50 CFR 600.920(j) requires the Federal agency to provide a written response to NOAA Fisheries after receiving EFH conservation recommendations within 30 days of its receipt of this letter. This response must include a description of measures proposed by the agency to avoid, minimize, mitigate or offset the adverse impacts of the activity on EFH. If the response is inconsistent with a conservation recommendation from NOAA Fisheries, the agency must explain its reasons for not following the recommendation.

3.8 Supplemental Consultation

The DRA must reinitiate EFH consultation with NOAA Fisheries if either action is substantially revised or new information becomes available that affects the basis for NOAA Fisheries' EFH conservation recommendations (50 CFR 600.920).

4. LITERATURE CITED

Section 7(a)(2) of the ESA requires biological opinions to be based on "the best scientific and commercial data available." This section identifies the data used in developing this Opinion in addition to the BA.

Belsky, J., A. Matzke, and S. Uselman. 1997. Survey of livestock influences on stream and riparian ecosystems in the western United States. Oregon Natural Desert Association. 38 p.

Bureau of Reclamation. 2003. Biological assessment on continued operation and maintenance of the Deschutes River Basin Projects and effects on Essential Fish Habitat under the Magnuson-Stevens Act. Lower Columbia Area Office, Portland, Oregon.

Busby, P.J., T.C. Wainwright, G.J. Bryant, L.J. Lierheimer, R.S. Waples, F.W. Waknitz, and I. V. Lagomarsino. 1996. Status Review of West Coast Steelhead from Washington, Idaho, Oregon, and California. NOAA Technical Memorandum NOAA Fisheries-NWFSC-27. August. 261 p.

Clary, W. P. and B. F. Webster. 1989. Managing grazing of riparian areas in the Intermountain Region. General Technical Report INT-263, U.S. Dept. of Agriculture, USFS, Intermountain Research Station, Ogden, Utah. 11 p.

Ehrhart, R.C. and P.L. Hansen. 1997. Effective cattle management in riparian zones: a field survey and literature review. USDI, Bureau of Land Management, Montana State Office. November.

Elmore, W. and B. Kauffman. 1994. Riparian and watershed systems: Degradation and Restoration. *In*: Ecological Implications of Livestock Herbivory in the West. Society for Range Management, Denver, Colorado. 297 p.

Kinch, G. 1989. Riparian area management: grazing management in riparian areas. U.S. Bureau of Land Management, Denver, Colorado. Tech. Ref. 737-4. 44 p.

Leonard, S., G. Kinch, V. Elsbernd, M. Borman, and S. Swanson. 1997. Riparian area management. TR 1737 14. Grazing management for riparian wetland areas. USDI Bureau of Land Management and USDA Forest Service. 63 p.

Lichatowich, J., R. Williams, and J.H. Nathan. 1998. A Conceptual Foundation for the Management of Native Salmonids in the Deschutes River. Prepared for Portland General Electric Company, Portland, Oregon. 170 p.

Myers, L. 1989. Grazing and riparian management in southwestern Montana. Proceedings, Practical Approaches to Riparian Resource Management an Educational Workshop. Billings, Montana.

National Marine Fisheries Service (NOAA Fisheries). 1996. Making ESA Determinations of Effect for Individual or Grouped Actions at the Watershed Scale. NOAA Fisheries, Environmental and Technical Services Division, Habitat Conservation Branch, 525 NE Oregon Street, Portland, Oregon. 28 p. (Available @ www.nwr.noaa.gov under Habitat Conservation Division, Habitat Guidance Documents).

NOAA Fisheries (*in review*). 2003. Preliminary conclusions regarding the updated status of listed ESUs of West Coast salmon and steelhead. 142 pages. February. NOAA Fisheries, 525 NE Oregon Street, Suite 500, Portland, Oregon 97232-2737. (Available @ www.nwfsc.noaa.gov/)

Nehlsen, W. 1995. Historical Salmon and Steelhead Runs of the Upper Deschutes River and Their Environments. Prepared for Portland General Electric Company, Portland, Oregon. 65 p. plus references and two appendices.

Northwest Power Planning Council. 1990. Salmon and Steelhead Production Plan, Deschutes River Subbasin. 146 p.

Oregon Department of Fish and Wildlife (ODFW). 1997. Lower Deschutes River Subbasin Management Plan. Mid-Columbia Fish District.

ODFW. 2000. Oregon Guidelines for Timing of In-Water Work to Protect Fish and Wildlife Resources. Portland, OR.

PFMC (Pacific Fishery Management Council). 1999. Amendment 14 to the Pacific Coast Salmon Plan. Appendix A: Description and Identification of Essential Fish Habitat, Adverse Impacts and Recommended Conservation Measures for Salmon. Portland, Oregon.

Platts, W. S. 1991. Livestock grazing. pp. 389-424 in Meehan, ed., Influences of Forest and Rangeland Management on Salmonid Fishes and Their Habitats. American Fisheries Soc., Bethesda, Maryland. 751 p.

Roberts, B.C., and R.G. White. 1992. Effects of angler wading on survival of trout eggs and pre-emergent fry. North American Journal of Fisheries Management. 12:450-459.

U.S. Department of Agriculture (USDA) and U.S. Department of Interior (USDI). 1994. Environmental Assessment for the Implementation of Interim Strateiges for Managing Anadromous Fish-producing Watersheds in Eastern Oregon and Washington, Idaho, and Portions of California (PACFISH). March.

Zimmerman, C.E. and G.H. Reeves. 1997. Steelhead and rainbow trout early life history and habitat use in the Deschutes River, Oregon. 1996 Annual Report prepared for Portland General Electric Company. Pelton Round Butte Hydroelectric Project FERC No. 2030.

Zimmerman, C.E. and G.H. Reeves. 1998. Steelhead and rainbow trout early life history and habitat use in the Deschutes River, Oregon. 1997 Annual Report prepared for Portland General Electric Company. Pelton Round Butte Hydroelectric Project FERC No. 2030.

Zimmerman, C.E. and G.H. Reeves. 1999. Steelhead and rainbow trout early life history and habitat use in the Deschutes River, Oregon. 1998 Annual Report prepared for Portland General Electric Company. Pelton Round Butte Hydroelectric Project FERC No. 2030.

Zimmerman, C.E. and G.H. Reeves. 2000. Population structure of sympatric anadromous and nonanadromous *Oncorhynchus mykiss*: Evidence from spawning surveys and otolith microchemistry. Can. J. Fish. Aquat. Sci. 57:2152-2162.